ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

Global Water - Palo Verde Utilities Company, LLC
Campus 1 Water Reclamation Facility
Aquifer Protection Permit #P-105228
Place ID 5048, LTF 64823
Significant Amendment

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to A.A.C. R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	Global Water, Palo Verde Utilities Company, LLC.
Mailing Address:	21410 N. 19th Avenue, Suite 201 Phoenix, Arizona 85027
Facility Name and Location:	Global Water - Palo Verde Utilities Company, LLC. Campus 1 Water Reclamation Facility 22590 N Powers Parkway Maricopa, Arizona, 85138 Pinal County

Regulatory Status

An application for this Significant Amendment was received on March 8, 2017.

Listed in the table below are various wastewater licenses issued by ADEQ to the permittee pertaining to the facility:

Type of license	License identifier	Effective date
Aquifer Protection Permit (APP)	P-105228 LTF No. 27853	6/23/2003
APP Other Amendment (increase flow capacity from 1.0 mgd to 3.0 mgd)	P-105228 LTF No. 34055	12/2/2004

APP Significant Amendment (increase flow capacity from 3.0 mgd to 9.0 mgd; add AZPDES disposal)	P-105228 LTF No. 34986	12/1/2005
APP Other Amendment (revise location of POC 3; set ALs and AQLs for POCs 2 and 3; change sampling frequencies for VOCs for POCs 2 and 3; change reporting frequencies for metals; change monitoring for fecal coliform to *E. coli* for discharge and reclaimed water monitoring)	P-105228 LTF No. 43460	11/5/2007
APP Other Amendment (add fine screen; replace headworks odor control system; replace aeration/mixing equipment and decanter in SBR tanks; replace existing filter with cloth media disc filters)	P-105228 LTF No. 49076	3/2/2010
APP Other Amendment (to consolidate APP No. 103558 for the aerated treatment lagoons into APP No. 105228; to allow temporary cessation of the two aerated treatment lagoons; to improve PEQB mixer and filter by-pass pipeline)	P-105228 LTF No. 58325	1/7/2014
APP Other Amendment for the installation of a new belt press for sludge dewatering.	P-105228 LTF No. 59947	6/13/2014
Temporary APP for a pilot project to operate a Biosolids Solar Drying Bed.	T-105228 LTF No. 61843	9/23/2015
Temporary APP for a pilot project to operate a Biosolids Solar Drying Bed. (Renewal)	T-105228 LTF No. 64231	7/12/2016

Facility Description

The Global Water, Palo Verde Utilities Company, LLC is authorized to operate the 12.0 million gallon per day (mgd) Global Water - Palo Verde Utilities Company, LLC. Campus 1 Water Reclamation Facility (WRF). The existing WRF is rated at 3.0 mgd. The WRF will be expanded in four phases, Phase I (5 mgd), Phase II (6 mgd), Phase III (10 mgd) and Phase IV (12 mgd). All Phases will be equipped with Integrated Film Activated Sludge (IFAS) technology with nitrification- de-nitrification capability The WRF is rated as producing Class A+ reclaimed water according to A.A.C. R18-11, Article 3, and may be discharged under AZPDES permit AZ0025071, to a recharge site owned by the same permittee APP No. 105922, or delivered for beneficial use under a valid reclaimed water permit as per A.A.C. R18-9, Article 7.

Existing WRF: The existing 3.0 mgd WRF, consists of an influent headworks with bar screen, a fine screen with grit removal, four sequencing batch reactors (SBR) for nitrification/denitrification, a post-equalization surge basin, cloth media disk filters, ultraviolet (UV) disinfection, an aerobic sludge digester, belt-press sludge dewatering, and an effluent pump station. The existing belt press unit will be used as backup for sludge dewatering. The sludge (including screenings, grit, and

scum) will be stored and dried in the Biosolids Solar Drying Bed (BSDB) before being hauled off-site for management or disposal in accordance with state and federal regulations.

Phase I WRF: The 5 mgd, Phase I WRF will consist of the existing headworks with bar screen, two rotating drum screens, a backup fine screen with a grit chamber, an equalization tank, an anoxic reactor, two aeration reactor trains with IFAS and aeration zones (each with a 3 mgd capacity), one new and one existing aeration blowers, three clarifiers (two duty and one redundant), two cloth media disk filters, four UV disinfection units, an effluent pump station, and two lined effluent storage ponds. The sludge will be digested in the existing and the modified aerobic sludge digesters and dewatered in the two existing belt press machines. The sludge will be (including screenings, grit, and scum) stored and dried in the BSDB before being hauled off-site for management or disposal in accordance with state and federal regulations. The existing sequencing batch reactor (SBR) #1 will be converted to an aerobic sludge digester. SBR #2 will be used as spare tank. SBR #3 will be converted to an equalization tank and SBR #4 will be converted to an anoxic tank.

Phase II WRF: The 6mgd, Phase II WRF will consist of the existing headworks with bar screen, two rotating drum screens, a backup fine screen with a grit chamber, an equalization tank, two aeration reactor trains with IFAS and aeration zones (each with a 3 mgd capacity), additional IFAS media added for 6 mgd treatment, two aeration blowers, three clarifiers, two cloth media disk filters, four UV disinfection units, an effluent pump station, and two lined effluent storage ponds. The sludge will be digested in the existing and the modified aerobic sludge digesters and dewatered in the two existing belt press machines. The sludge (including screenings, grit, and scum) will be stored and dried in the BSDB before being hauled off-site for management or disposal in accordance with state and federal regulations.

Phase III WRF: The 10 mgd, Phase III WRF will consist of the existing headworks with bar screen, the two existing and one new rotating drum screen(s), a backup fine screen with a grit chamber, two equalization tanks and anoxic reactor trains, four aeration reactor trains with IFAS and aeration zones (each with a 3 mgd capacity), the existing and a new aeration blower(s), three existing and two new clarifiers (one redundant), two existing and one new cloth media disk filters, four existing and one new UV disinfection unit(s), an effluent pump station, and two lined effluent storage ponds. The modified SBR #1 aerobic digester will be converted back to an anoxic reactor. The sludge will be digested in the existing aerobic sludge digesters, thickened in a new thickener and dewatered in the two existing and one new belt press machines. The sludge (including screenings, grit, and scum) will be stored and dried in the BSDB before being hauled off-site for management or disposal in accordance with state and federal regulations.

Phase IV WRF: The 12 mgd Phase IV WRF will consist of the existing headworks with bar screen, three rotating drum screens, a backup fine screen with a grit chamber, two equalization tank and anoxic reactor trains, four aeration reactor trains with IFAS and aeration zones (each with a 3 mgd capacity), the existing and a new aeration blower(s), the five existing clarifiers, the three existing cloth media disk filters, the four existing and one new UV disinfection unit(s), The existing effluent pump station will be upgraded with a new pump, and two lined effluent storage ponds. The sludge will be digested in the existing aerobic sludge digesters, thickened in a new thickener and dewatered in the three existing belt press machines. The sludge (including

screenings, grit, and scum) will be stored and dried in the BSDB before being hauled off-site for management or disposal in accordance with state and federal regulations.

The effluent may be stored in the two lined storage ponds, discharged under a valid AZPDES permit (AZ0025071), discharged to the recharge site owned by the same permittee (under APP #105922), or used for beneficial purposes under a valid reclaimed water permit.

The BSDB was permitted under a Temporary Aquifer Protection Permit to dry the sludge from old treatment lagoons (previously under APP #103558, which was released on January 8, 2014). These lagoons were in temporary cessation, on March 18, 2016, Emery Layton, Global Water's Professional Engineer (P.E.), submitted a P.E. stamped and signed field report recommending the lagoons be repurposed as effluent lined storage ponds. On March 24, 2016, the ADEQ approved the repurposing of the lagoons for effluent storage under this amendment. The BSDB will be permitted under this amendment to store and dry the sludge from the belt press. The BSDB is 200 feet by 390 feet in area with a total volume of 1.74 million gallons. The BSDB is lined with 2.5 inches of asphalt paving over four inches of aggregate base (AB) crushed rock. The supernatant from the Biosolids is captured in a drain catch basin below the drying bed surface. The supernatant will flow to an eight-foot-deep manhole to be pumped back to the headworks of the WRF.

The site includes the following permitted discharging facilities:

Facility	Latitude (North)	Longitude (West)
WRF	33° 05' 12" N	112° 00' 42" W
Effluent Storage Pond 1	33° 05' 4.9" N	112° 00' 44.2" W
Effluent Storage Pond 2	33° 05' 4.9" N	112° 00' 41.9" W
Biosolids Solar Drying Bed (BSDB)	33° 05' 12.89" N	112° 00' 37.82" W
AZPDES outfall #1	33° 04' 20" N	112° 01' 48" W
AZPDES outfall #2	33° 03' 31" N	112° 01' 48.5" W
AZPDES outfall #3	33° 02' 49" N	112° 01' 51" W

Amendment Description

ADEQ has reviewed and approved the following under this permit amendment:

- Increase of the flow for the WRF from 9 mgd to 12 mgd;
- The addition of new treatment trains, new treatment units and the modification of the existing sequencing batch reactor to anoxic basins;
- Modification of the Sequential Batch Reactor (SBR) Treatment Process to an Integrated Fixed-Film Activated Sludge (IFAS) treatment process;
- Modification of the location of the point of compliance for effluent sampling and POC Wells;
- Re-purpose of the existing lined lagoons to use as effluent storage basins;
- The addition of the Biosolids Solar Drying Bed to this permit.

These changes have been reflected in the facility description and the Tables in Section 4.2.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The mechanical WRF is designed to meet the treatment performance criteria for new facilities as specified in A.A.C. R-18-9-B204. The facility shall meet the performance requirement for industrial pre-treatment as per A.A.C. R18-9-B204(B)(6)(b).

III. HYDROGEOLOGIC SETTING

The PMA as described in ARS §49-244 is the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The PMA includes horizontal space taken up by any liner, dike or other barrier designed to contain pollutants in the facility. If the facility contains more than one discharging activity, the PMA is described by an imaginary line circumscribing the various discharging activities. Two PMAs have been determined for this facility. The first PMA is defined by a line circumscribing all wastewater treatment components and effluent storage ponds (2) located on the WRF site. The second PMA is within Santa Rosa Wash, and is defined by a line circumscribing the surficial extent of surface water flow within Santa Rosa Wash as a result of AZPDES discharges at three discrete locations, located approximately one mile apart. This second PMA could extend approximately six miles northward from the southernmost AZPDES discharge point (AZPDES Outfall #003) if all effluent were discharged to the wash upon build-out to the ultimate design flow of 12.0 mgd. At the anticipated AZPDES discharge rate of 3.536 mgd, the PMA is anticipated not to exceed four miles in length during the winter months.

The discharge impact area (DIA) is defined by ARS §49-201.13. The DIA means the potential area extent of pollutant migration, as projected on the land surface, as the result of a discharge from a facility. The DIA at the WRF is similar in shape and size to the PMA because the WRF and effluent storage ponds are lined to prevent leakage greater than 550 gpd/acre (definition for a non-discharging facility).

The second DIA within Santa Rosa Wash as a result of AZPDES discharges is defined by the length of the PMA and groundwater flow direction. The length of the PMA is anticipated to vary from four to six miles in length depending on the AZPDES discharge volumes. The groundwater flow direction is anticipated to fluctuate from southeast to northward depending on seasonal pumping for irrigation, cessation of pumping as the area is converted to residences, and infiltration of effluent. This DIA is anticipated to be similar in shape t0 the PMA, resulting in an oval shape due to the three discrete surface discharge points and transient (fluctuating) groundwater flow directions. The DIA for the expected flow of 3.536 mgd to the AZPDES outfalls is anticipated to extend approximately one mile in all directions from each AZPDES discharge point with a total length of five miles in the direction of groundwater flow and two miles in the cross-gradient direction. The DIA for the maximum flow of 13.0 mgd (future build-out flow) is anticipated to extend approximately three miles in all directions from each AZPDES discharge point for a total length of nine miles in the direction of groundwater flow and a maximum of six miles cross-gradient. The maximum water level rise due to infiltration of effluent from the AZPDES discharges was calculated at 110.6 feet at 13.0 mgd while the expected rise at flows with an annual average of 3.536 mgd were calculated to be 30.8 feet after 20 years of recharge.

There are 20 wells registered with ADWR located within the DIA. The wells are used for irrigation and municipal/domestic drinking water.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

The Campus 1 Water Reclamation Facility (WRF) is not located within the 100-year flood plain based upon Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA) and is protected from storm water run-off.
The site is located approximately 0.5 miles west of the poorly defined ephemeral Santa Cruz Wash and one mile east of the northward trending ephemeral Santa Rosa Wash. Santa Rosa Wash is a tributary to the Santa Cruz Wash located in the Lower Santa Cruz sub-basin of the Santa Cruz River surface water basin. Surface water within the basin flows northward until it joins the Gila River about 17 miles north of the site.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Monitoring and Reporting Requirements

To ensure that site operations do not result in a violation of Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent will be collected from the effluent pump station and will be monitored daily for *E. coli*, monthly for total nitrogen, quarterly for metals, and semi-annually for volatile and semi-volatile organic compounds (VOCs and SVOCs).

To ensure that site operations do not result in violation of Reclaimed Water Standards for the beneficial use of Class A+ reclaimed water, representative samples of the reclaimed water will be collected from the effluent pump station and will be monitored daily for *E. coli* and turbidity, and monthly for total nitrogen.

To ensure that Aquifer Water Quality Standards will be met at the point of compliance (POC) in the aquifer, representative samples of the groundwater will be collected from POCs 2 and 3, and will be sampled monthly for total coliform, total nitrogen, nitrate-nitrite as N, metals, and semi-annually for volatile and semi-volatile organic compounds (VOCs and SVOCs).

Facility inspections and operational monitoring shall be performed on a routine basis (see Section 4.2, Table III).

Point of Compliance (POC)

The Points of Compliance (POC) are designated at the following locations:

POC #	POC Location	Latitude	Longitude
1	Designated POC, located northwest of the WRF (ADWR Well #55-907127) (Contingency well for discharging to the recharge site)	33° 05' 13" N	112° 00' 42" W
2	POC well #2, located approximately at AZPDES outfall #1	33° 04' 20" N	112° 01' 47" W
3	POC well #3, located approximately 1000 feet south of AZPDES outfall #3	33° 02' 39" N	112° 01' 49" W
4	Next to Santa Rosa Wash near the edge of the Gila River Indian Community boundary (12 mgd Conceptual POC Well)	33° 05' 12.77" N	112° 01' 50.17" W

5	Located approximately 110 feet downgradient (northwest) of the north side of the BSDB. (BSDB conceptual POC Well)	33° 05' 16.20" N	112° 00' 38.95" W

Routine groundwater monitoring is required at POC #2 and #3 as per Section 4.2, Table IIA. POC #1 (located downgradient of the WRF) is a contingency well; groundwater monitoring is not required until recharge commences under APP No. 105922 (the APP for the recharge site owned by the same permittee). This monitoring well is also utilized for groundwater monitoring under APP #105922 (POC #1) as per Section 4.2, Table IIB. POC #4 is a conceptual well; well installation and groundwater monitoring are not required until operating capacity and discharge rates of 12 mgd are achieved in Phase IV. POC #5 is a contingency well for the BSDB, groundwater monitoring is required only as a contingency.
Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.

VI. COMPLIANCE SCHEDULE

A compliance schedule is included in Section 3.0 of the permit.

No.	Description	Due by:	Permit Amendment Required?
3.1	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that Phase I has been constructed according to the Department-approved design report or plans and specifications, as applicable for Phase I of the WRF.	Within 60 days of completion of construction of Phase I and prior to commencing discharge from Phase I of the WRF	No
3.2	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that Phase II has been constructed according to the Department-approved design report or plans and specifications, as applicable for Phase II of the WRF.	Within 60 days of completion of construction of Phase II and prior to commencing discharge from Phase II of the WRF	No
3.3	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that Phase III has been constructed according to the Department-approved design report or plans and specifications, as applicable for Phase III of the WRF.	Within 60 days of completion of construction of Phase III and prior to commencing discharge from Phase III of the WRF	No
3.4	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that the new Phase III belt press has been constructed according to the Department-approved design report or plans and specifications.	Within 90 days of completion of construction of Phase III and prior to commencing discharge from Phase III of the WRF	No

3.5	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that Phase IV has been constructed according to the Department-approved design report or plans and specifications, as applicable for Phase IV of the WRF.	Within 60 days of completion of construction of Phase IV and prior to commencing discharge from Phase IV of the WRF	No
3.6	The permittee shall submit a demonstration that the financial assurance mechanism listed in Section 2.1, Financial Capability, is being maintained as per A.R.S. 49-243.N.4 and A.A.C. R18-9-A203(H) for all estimated closure and post-closure costs including updated costs submitted under Section 3.0, No. 3.7 below. The demonstration shall include a statement that the closure and post-closure strategy has not changed, the discharging facilities listed in the permit have not been altered in a manner that would affect the closure and post-closure costs, and discharging facilities have not been added. The demonstration shall also include information in support of a certificate of deposit or any other financial assurance mechanism available A.A.C. R18-9-A203(C)(1-9).	Every 6 years from the date of permit signature, for the duration of the permit.	No
3.7	The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5) and A.R.S. 49-243.N.2.a., amendment type will be "Other."	Every 6 years from the date of permit signature, for the duration of the permit.	Yes
3.8	The permittee shall evaluate POC #3 and submit an evaluation report per Section 2.7.4.1. If the report demonstrates contaminants are not influenced from the design of POC Well #3 or the facilities discharge at AZPDES Outfall #3, ADEQ will require the upstream CAFOs, Composting Facility and Energy Company(s) to install POC Wells to verify their facilities are not potentially contaminating the aquifer.	Within 180 days of permit issuance	No
3.9	The permittee shall submit a quarterly report that includes the results of the daily H_2S monitoring at the East, West, North and South odor monitoring equipment. The H_2S levels at the referenced monitoring equipment locations shall not exceed 0.03 parts per million (ppm) for two continuous hours. The report shall provide an explanation of any exceedance in H_2S levels above 0.03 ppm and the details related to the investigation of the odor sources.	Within 30 days from the end of each quarter.	No
3.10	The permittee shall submit a report to propose permanent odor control for the IFAS aeration basins and or clarifiers if the facility exceeds the H_2S 0.03 ppm limit three (3) times in a month. The report shall detail whether the aeration basins and or clarifiers caused the H_2S odors. The report shall include a detailed proposal to provide full odor control.	Within 30 days of the 3rd exceedance of H_2S level in a month	No

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

Global Water-Palo Verde Utilities Company, LLC has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

The permit requires that appropriate documents be sealed by an Arizona-registered geologist or professional engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

Global Water-Palo Verde Utilities Company, LLC has demonstrated the financial responsibility necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee is expected to maintain financial; capability throughout the life of the facility. The permittee has submitted a closure cost estimate of $426,600.00. The permittee provided a Certificate of Deposit, according to R18-9-A203 (C) (3), to demonstrate financial capability.

Zoning Requirements

The WRF has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(B)(3).

VIII. ADMINISTRATIVE INFORMATION

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit.

Public Comment Period (A.A.C. R18-9-109(A))

The Department shall accept written comments from the public before a significant permit amendment is made. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if

the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

IX. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Groundwater Protection Value Stream – APP Unit 1
Attn: Monica Phillips
1110 West Washington Street, Mail Code 5600D-3
Phoenix, Arizona 85007
Phone: (602) 771-2253